

Claims

1. A fusion protein comprising (a) a ligand-binding domain, (b) a domain that associates when a ligand binds to the domain of (a), and (c) a domain comprising a cytokine receptor or a part thereof that imparts proliferation activity to a cell upon the association.

2. The fusion protein of Claim 1, wherein the "domain comprising a cytokine receptor or a part thereof that imparts proliferation activity to a cell upon the association" is derived from a G-CSF receptor or c-mpl.

3. The fusion protein of Claim 1, wherein the "ligand-binding domain" is derived from a steroid hormone receptor.

4. The fusion protein of Claim 3, wherein the steroid hormone receptor is an estrogen receptor.

5. The fusion protein of Claim 1, wherein the "ligand" is a tamoxifen, the derivative thereof, or the metabolite thereof and the "ligand-binding domain" and "a domain that associates when a ligand binds to said domain" are derived from a mutant estrogen receptor that is unresponsive to a estrogen and that is responsive to a tamoxifen, the derivative thereof, or the metabolite thereof.

6. A DNA encoding the fusion protein of Claim 1.

7. A vector comprising a DNA of Claim 6.

8. A cell carrying the vector of Claim 7.

9. A method for selectively proliferating the cell of Claim 8, which comprises exposing the cell of Claim 8 to a ligand capable of acting on the "ligand-binding domain" of the fusion

protein of Claim 1.

Sub B1 10. A vector comprising a desired exogenous gene and a gene encoding a fusion protein comprising (a) a ligand-binding domain, (b) a domain that associates when a ligand binds to the domain of (a), and (c) a domain that imparts proliferation activity to a cell upon the association.

11. The vector of Claim 10, wherein the "domain that imparts proliferation activity to a cell upon the association" is derived from a cytokine receptor.

12. The vector of Claim 11, wherein the cytokine receptor is a G-CSF receptor or c-mpl.

13. The vector of Claim 10, wherein the "ligand-binding domain" is derived from a steroid hormone receptor.

14. The vector of Claim 13, wherein the steroid hormone receptor is an estrogen receptor.

15. The vector of Claim 10, wherein the "ligand" is a tamoxifen, the derivative thereof, or the metabolite thereof, and the "ligand-binding domain" and "a domain that associates when a ligand binds to said domain" are derived from a mutant estrogen receptor that is unresponsive to a estrogen and that is responsive to a tamoxifen, the derivative thereof, or the metabolite thereof.

16. The vector of Claim 10, wherein the "gene encoding a fusion protein" and the "exogenous gene" are located on the same molecule.

17. The vector of Claim 10, wherein the "gene encoding a fusion protein" and the "exogenous gene" are located on separate molecules.

18. A cell carrying the vector of claim 10.

19. A method for selectively proliferating the cell of Claim 18, which comprises exposing the cell of Claim 18 to a ligand capable of acting on the "ligand-binding domain" of the fusion protein encoded by the gene contained in the vector of Claim 10.

20. A kit comprising (a) the vector of Claim 7 or Claim 10, and (b) a ligand capable of acting on the "ligand-binding domain" of the fusion protein encoded by the gene contained in the vector.